

Appl. No.: 10/549,387
Amdt. dated March 9, 2010
Reply to Office Action of November 9, 2009

Amendments to the Drawings:

Please replace sheets 1 and 2 of 24 with replacement sheets 1 and 2 of 24. These sheets have been relabeled to correctly identify Figures 1-5 as prior art.

Attachment: Replacement Sheets 1 and 2 of 24.

Appl. No.: 10/549,387
Amdt. dated March 9, 2010
Reply to Office Action of November 9, 2009

REMARKS/ARGUMENTS

This Amendment is filed in response to the Office Action dated November 9, 2009. In the Office Action, Figures 1-5 have been objected to because they should be designated as prior art. Claim 74 has been rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Further, Claim 74 has been rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Claims 58-60, 63, 64, 69, 70, and 73 have been rejected under 35 U.S.C. § 102(a) as being anticipated by WO 02/078280 to Schaefer et al. (“Schaefer”). Claim 61 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Schaefer*. Claims 71 and 72 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Schaefer* in view of WO 93/09622 to Jasper et al. (“Jasper”). Claim 74 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Schaefer* in view of U.S. Patent 5,852,850 to Langberg et al. (“Langberg”). Claims 62 and 65-68 have been objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. The listed objections and rejections are addressed below. For the Examiner’s reference, Applicant has previously canceled Claims 1-57 and has amended Claim 74. Accordingly, Claims 58-74 remain pending in the application for the Examiner’s consideration.

Drawings

On Page 2, the Office Action indicates that Figures 1-5 should be designated by a legend such as – Prior Art – because only that which is old is illustrated. Corrected drawings are attached hereto along with this Amendment. Accordingly, Applicant respectfully requests the Examiner to withdraw the current objection to Figures 1-5.

Claim Rejection under 35 U.S.C. § 101

On Page 2, the Office Action indicates that Claim 74 is rejected because the claimed invention is directed to non-statutory subject matter. Specifically, the Office Action states that Claim 74 recites “a computer program, preferably on a data carrier ...” and a carrier is a “signal” per se and a signal is directed to non-statutory subject matter. Without agreeing to the premise

Appl. No.: 10/549,387
Amdt. dated March 9, 2010
Reply to Office Action of November 9, 2009

that a “data carrier” is a “signal” per se, Applicant has amended Claim 74 to delete the phrase “a data carrier.” Therefore, Applicant respectfully requests the Examiner to withdraw the current § 101 rejection of this claim.

Claim Rejection under 35 U.S.C. § 112

Further, on Page 2, Claim 74 has been rejected as failing to comply with the written description requirement. In particular, the Office Action asserts that the claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The Office Action indicates that Claim 74 recites “a computer program, preferably on a data carrier or a computer readable medium having a code or instructions for carrying out the method of claim 58.” However, the Office Action further indicates that this claim limitation is not supported by the specification anywhere.

Applicant respectfully points out that the claims originally filed in this application includes Claims 59-61 directed to “[a] computer program, preferably on a data carrier or a computer readable medium, having code or instructions for ...” As recited in 35 U.S.C. § 112, second paragraph, “[t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” Thus, the claims are considered a part of the specification. *Also See* MPEP 608.01(I). Accordingly, the claim limitation suggested by the Office Action has not supported is supported by Claims 59-61 that were originally filed in specification. For this reason, Applicant respectfully requests the Examiner to withdrawn the current § 112 rejection of this claim.

Claim Rejection under 35 U.S.C. § 102

As mentioned, Claims 58-60, 63, 64, 69, 70, and 73 have been rejected as anticipated by *Schaefer*. The rejection of each claim is addressed below.

Independent Claim 58

Applicant respectfully submits that *Schaefer* fails to teach or suggest each and every feature of independent Claim 58. For instance, Claim 58 recites the steps of: (1) convoluting real data in each real data block with at least some of the control data in the control data blocks and (2) modulating or transforming the convoluted real data in the real data blocks with one or more sub-carrier signals.

Schaefer describes a method for frame and frequency synchronization of an OFDM signal, the purpose of which is to impress a pilot phase profile that is then used at the receiving end for frame and frequency synchronization on pilots which are already contained in the OFDM signal for channel estimation. *See Abstract.* The method is initiated by a rough time synchronization unit connected upline, which searches for the beginning of the guard interval in the OFDM signal. *Id.* Comparison between a stored pilot phase profile and a received subcarrier symbol is performed using a cross-correlation, whose result is then evaluated to determine the frame and frequency synchronization. *Id.*

On Pages 3 and 4, the Office Action asserts that Col. 4, lines 20-35 discloses these two steps. However, Applicant respectfully disagrees and asserts that there is no disclosure in *Schaefer* of any adapting or encoding of real data by convoluting it with control data from a control data block.

For instance, the equations described in Col. 4 of *Schaefer* for $p(1,k)$ apply a unique phase profile on the pilots to ensure that the crest factor of the pilots is kept low. *See Col 3, lines 64-67.* Equation 1 of *Schaefer* confirms that only the phase of the control pilot is of interest. Thus, *Schaefer* does not describe any intention or desire to adapt or encode any real data.

Further, Col 4, lines 10-12 of *Schaefer* recite “[i]t must be kept in mind that the phase of the pilot subcarriers depends only on the subcarrier index $p(l,k)$ in Equation 1.” Again, there is no teaching or suggestion of adapting or encoding any of the real data, never mind doing so with

Appl. No.: 10/549,387
Amdt. dated March 9, 2010
Reply to Office Action of November 9, 2009

the control data. This is confirmed further in Col. 8, lines 12 -15 of *Schaefer*, which recite:

In a first method step 23 the pilots and the useful symbols to be transmitted are mapped to an OFDM symbol. At the same time, *the unique phase profile is impressed on the pilots* (method step 24). The resulting OFDM symbol is then fed to OFDM modulator 10 and 11 (method step 25), in order to generate an OFDM signal. Emphasis added.

Accordingly, *Schaefer* simply fails to teach or suggest in any of these passages that there is any modification of the real data using data from the control or pilot blocks. Instead, the only changes made are to the pilot data. As shown, *Schaefer*'s equations for $p(l,k)$ are simply mixing pilot position with previously agreed phase assignments or phase patterns. Such mathematical matrix assignment of pilot positions and pilot phases cannot be considered as convoluting real data in each real data block with at least some of the control data in the control data blocks.

The Office Action expresses the view that the additional phase assignment can be considered real data, because it is a function of the sub-carrier index and the OFDM symbol number. However, Applicant respectfully disagrees. In Claim 58, real data in real data blocks is convoluted with control data in the control data blocks. Thus, a person of ordinary skill in the art would not interpret the sub-carrier index and the OFDM symbol number as being "real data in each real data blocks."

For at least the reasons set forth above, Applicant respectfully submits that *Schaefer* fails to teach or suggest at least these features recited in independent Claim 58. Accordingly, Applicant respectfully requests the Examiner to withdraw the current rejection of Claim 58 under § 102(a).

Appl. No.: 10/549,387
Amdt. dated March 9, 2010
Reply to Office Action of November 9, 2009

Dependent Claims 59-60, 63, 64, 69, 70, and 73

Claims 59-60, 63, 64, 69, 70, and 73 depend from independent Claim 58. The patentability of independent Claim 58 has been argued as set forth above and thus Applicant will not take this opportunity to argue the merits of the rejection with regard to these dependent claims. However, Applicant does not concede that these dependent claims are not independently patentable and reserve the right to argue the patentability of the dependent claims at a later date if necessary.

Claim Rejection under 35 U.S.C. § 103

As mentioned, Claim 61 has been rejected as being unpatentable over *Schaefer*. Claims 71 and 72 have been rejected as being unpatentable over *Schaefer* in view of *Jasper*. Claim 74 has been rejected as being unpatentable over *Schaefer* in view of *Langberg*. The rejection of each claim is addressed below.

Dependent Claims 61, 71-72, and 74

Claims 61, 71-72, and 74 depend from independent Claim 58. The patentability of independent Claim 58 has been argued as set forth above and thus Applicant will not take this opportunity to argue the merits of the rejection with regard to these dependent claims. However, Applicant does not concede that these dependent claims are not independently patentable and reserve the right to argue the patentability of the dependent claims at a later date if necessary.

Allowable Subject Matter

Claims 62 and 65-68 have been objected to as being dependent upon a rejected base claim, however these claims have been indicated as allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Based at least on the reasons set forth above with respect to the patentability of Claim 58, Applicant respectfully submits that Claims 62 and 65-68 are allowable in their current form because these claims depend from allowable base claims. Accordingly, Applicant respectfully requests the Examiner to withdraw the current objection of these claims.

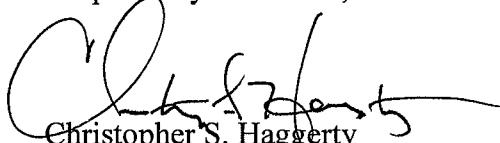
Appl. No.: 10/549,387
Amdt. dated March 9, 2010
Reply to Office Action of November 9, 2009

Conclusion

The foregoing is submitted as a full and complete response to the Office Action dated November 9, 2009. The foregoing amendments and remarks are believed to have placed the present application in condition for allowance, and such action is respectfully requested. The Examiner is encouraged to contact Applicant's undersigned attorney at (404) 881-7640 or e-mail at chris.haggerty@alston.com to resolve any remaining issues in order to expedite examination of the present application.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



Christopher S. Haggerty
Registration No. 58,100

Customer No. 00826
ALSTON & BIRD LLP
Bank of America Plaza
101 South Tryon Street, Suite 4000
Charlotte, NC 28280-4000
Tel Atlanta Office (404) 881-7000
Fax Atlanta Office (404) 881-7777

ELECTRONICALLY FILED USING THE EFS-WEB ELECTRONIC FILING SYSTEM OF THE UNITED STATES PATENT & TRADEMARK OFFICE ON March 9, 2010.